IEEE 802.11b/g/n
Wireless Outdoor CPE

Quick Installation Guide

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About the Quick Installation Guide

This Quick Installation Guide is intended to guide professional installer to install the IEEE 802.11b/g/n Wireless CPE. It covers procedures to assist you in avoiding unforeseen problems.

Conventions

Warning:

This sign indicates a warning or caution that you have to abide.

Note:

This sign indicates an important note that you must pay attention to.

Chapter 1 Introduction

Introduction

The IEEE 802.11b/g/n Wireless CPE is a multi-mode last-mile broadband solution for customers like wireless ISP (WISPs) and system integrators. By the nature of complying with the IEEE802.11n standard and featuring high power output, IEEE 802.11b/g/n Wireless CPE supports higher bandwidth with longer range for outdoor applications.

IEEE 802.11b/g/n Wireless CPE can be used as the access point, the customer premises equipment (CPE), the WDS or the AP Repeater. While being as the access point, it can be deployed outdoors to provide outdoor wireless internet service. In the other way to be as the outdoor CPE, it can receive wireless signal over the last mile, helping WISPs deliver internet service to the new residential and the business customer where wired broadband internet service, such as cable and DSL, can not serve in. In addition, the easy-to-install IEEE 802.11b/g/n Wireless CPE covers 2.4GHz bands, which features outstanding throughput performance and a cost-effective design that allows users to have the reliable outdoor equipment at the affordable price.

Chapter 2 Preparation before Installation

This chapter describes safety precautions and product information you have to know. Please check this chapter before installing the IEEE 802.11b/g/n Wireless CPE.

Professional Installation Required

Please seek assistance from a professional installer who is well trained in the RF installation and knowledgeable in the local regulations.

Safety Precautions

To keep you safe and install the hardware properly, please read and follow these safety precautions.

1. If you are installing the IEEE 802.11b/g/n Wireless CPE for the first time, for your safety as well as others', please seek assistance from a professional installer who has received safety training on the hazards involved.
2. Keep safety as well as performance in mind when selecting your installation site, especially where there are electric power and phone lines.
3. When installing the IEEE 802.11b/g/n Wireless CPE, please note the following things:
   - Do not use a metal ladder;
   - Do not work on a wet or windy day;
   - Wear shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.
4. When the system is operational, avoid standing directly in front of it. Strong RF fields are present when the transmitter is on.

Installation Precautions

To keep the IEEE 802.11b/g/n Wireless CPE well while you are installing it, please read and follow these installation precautions.

1. Users MUST use a proper and well-installed grounding and surge arrestor with the IEEE 802.11b/g/n Wireless CPE; otherwise, a random lightening could easily cause fatal damage to IEEE 802.11b/g/n Wireless CPE. **EMD (Lightning) DAMAGE IS NOT COVERED UNDER WARRANTY.**
2. Users MUST use the “Power cord & PoE Injector” shipped in the box with the IEEE 802.11b/g/n Wireless CPE. Use of other options will cause damage to the IEEE 802.11b/g/n Wireless CPE.
3. Users MUST power off the IEEE 802.11b/g/n Wireless CPE first before connecting the external antenna to it. Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto the IEEE 802.11b/g/n Wireless CPE; otherwise, damage might be caused to the IEEE 802.11b/g/n Wireless CPE itself.

Product Package

The product package you have received should contain the following items. If any of them are not included or damaged, please contact your local vendor for support.

IEEE 802.11b/g/n Wireless CPE	×1
Pole Mounting Ring	×1
Power cord & PoE Injector	×1
Quick Installation Guide	×1
Product CD	×1

Note:

Product CD contains Quick Installation Guide and User Manual!

- Pole Mounting Ring

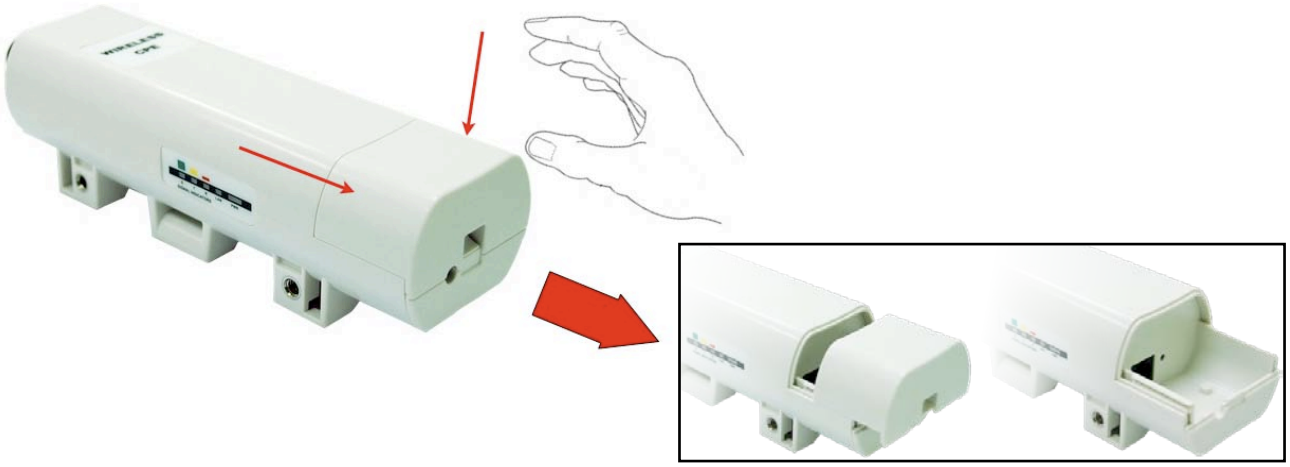
- Power cord & PoE Injector

Warning:

Users MUST use the “Power cord & PoE Injector” shipped in the box with the IEEE 802.11b/g/n Wireless CPE. Use of other options will cause damage to the IEEE 802.11b/g/n Wireless CPE.

Chapter 3 System Installation

1. The bottom of the IEEE 802.11b/g/n Wireless CPE is the movable cover. Grab the cover and pull it back harder to take it out as the figure shown below.



2. Plug a standard Ethernet cable into the RJ45 port.

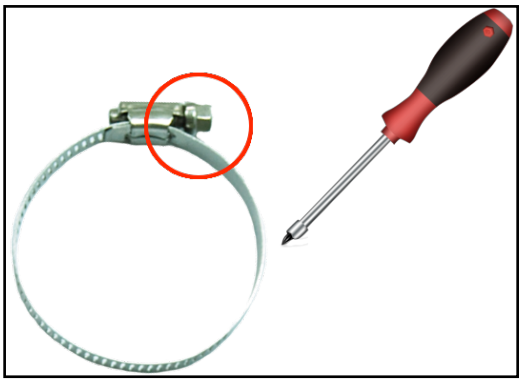
3. Slide the cover back to seal the bottom of the IEEE 802.11b/g/n Wireless CPE.

4. Take out the power cord and PoE injector, and plug the power cord into the DC port of the PoE injector as the bottom right picture shows.

5. Put what in the Step.3 and Step.4 together by plugging the other side of the Ethernet cable in the Step.3 into the PoE port of the PoE injector in the Step.4. When you finish the Step.5, the complete set will be like the following picture.

6. Turn the IEEE 802.11b/g/n Wireless CPE over. Put the pole mounting ring through the middle hole of the IEEE 802.11b/g/n Wireless CPE.

   Note: Unlock the pole mounting ring by a screw driver before putting it through the IEEE 802.11b/g/n Wireless CPE as the bottom right picture shows.



7. Mount the IEEE 802.11b/g/n Wireless CPE steadily to the pole by locking the pole mounting ring tightly.

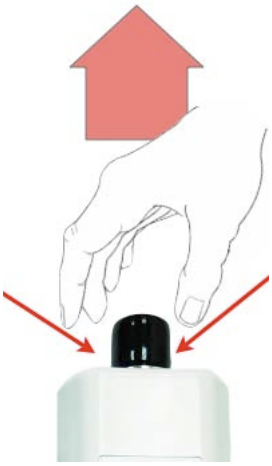
8. Successful installation.

Using the external antenna

If you prefer to use the external antenna with N-type connector for your application instead of

the built-in directional antenna, please follow the steps below.

1. Grab the black rubber on the top of the IEEE 802.11b/g/n Wireless CPE, and slightly pull it up as the figure shown below. The metal N-type connector will appear.



2. Connect your antenna with the N-type connector on the top of the IEEE 802.11b/g/n Wireless CPE.

Note:

- Before using the external antenna with the N-type connector to the IEEE 802.11b/g/n Wireless CPE, users should prepare the cable in advance, if needed.
- While connecting the N-type connectors, users should pay attention to the forces they use in prevention of the damage for N-type connectors.

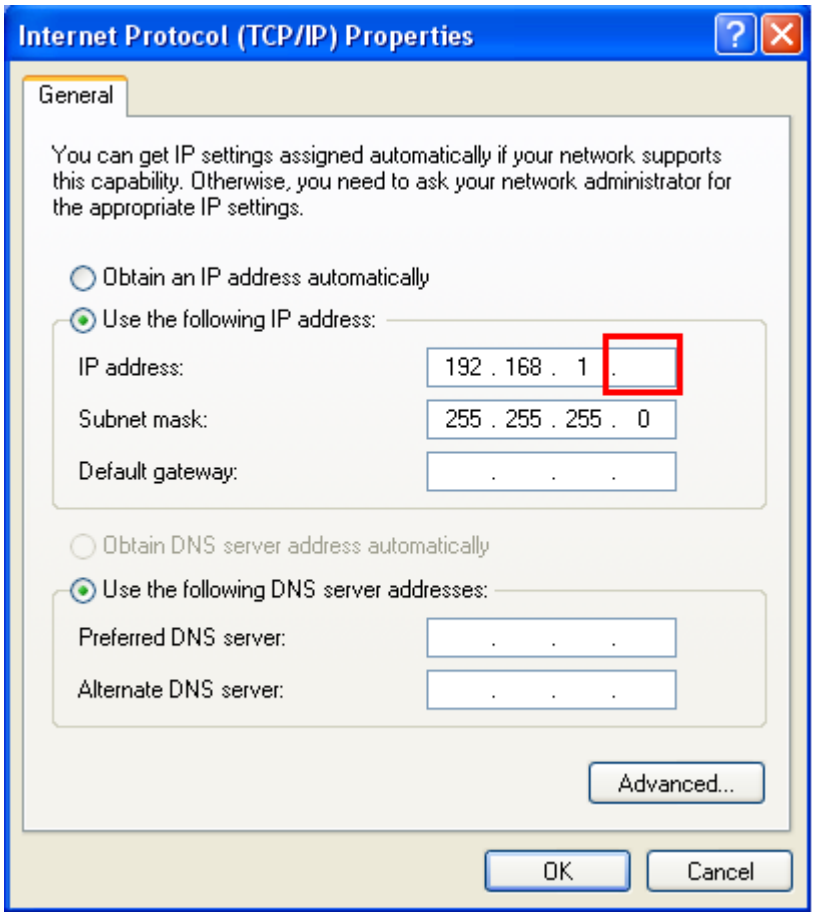
Warning:

- Users MUST power off the IEEE 802.11b/g/n Wireless CPE first before connecting the external antenna to it. Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto the IEEE 802.11b/g/n Wireless CPE; otherwise, damage might be caused to the IEEE 802.11b/g/n Wireless CPE itself.

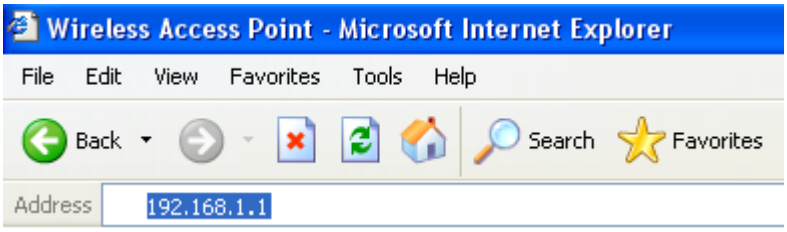
Chapter 4 Configuration

Connect the IEEE 802.11b/g/n Wireless CPE with your PC by an Ethernet cable plugging in LAN port of PoE injector in one side and in LAN port of PC in the other side. Power on the IEEE 802.11b/g/n Wireless CPE by PoE from PoE injector.

1. Assign a static IP address to your PC which should be in the same network segment with the IEEE 802.11b/g/n Wireless CPE. As the default IP address of the IEEE 802.11b/g/n Wireless CPE is 192.168.1.1, you may choose from 192.168.1.2 to 192.168.1.254. Then click **OK**.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 .
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

2. Open the web browser on your PC, key in the IP address (192.168.1.1) of the IEEE 802.11b/g/n Wireless CPE in the address bar, and then enter.



3. Now, you will see the log-in page of the IEEE 802.11b/g/n Wireless CPE. The default "Name" and "Password" are "**admin**" and "**password**" respectively. Enter them and then click **Login**.

* Since the IEEE 802.11b/g/n Wireless CPE covers "AP mode", "Wireless Client mode", "Bridge mode" as well as "AP Repeater mode", the following steps are categorized for convenience reading to describe how to set each mode after successful log-in.

AP Mode

1. Choose **Wireless > Basic Settings**. The default is AP mode already. Here, you can set the parameters to optimize your application, or you can leave them as the default. Click **Apply** to save the parameters.

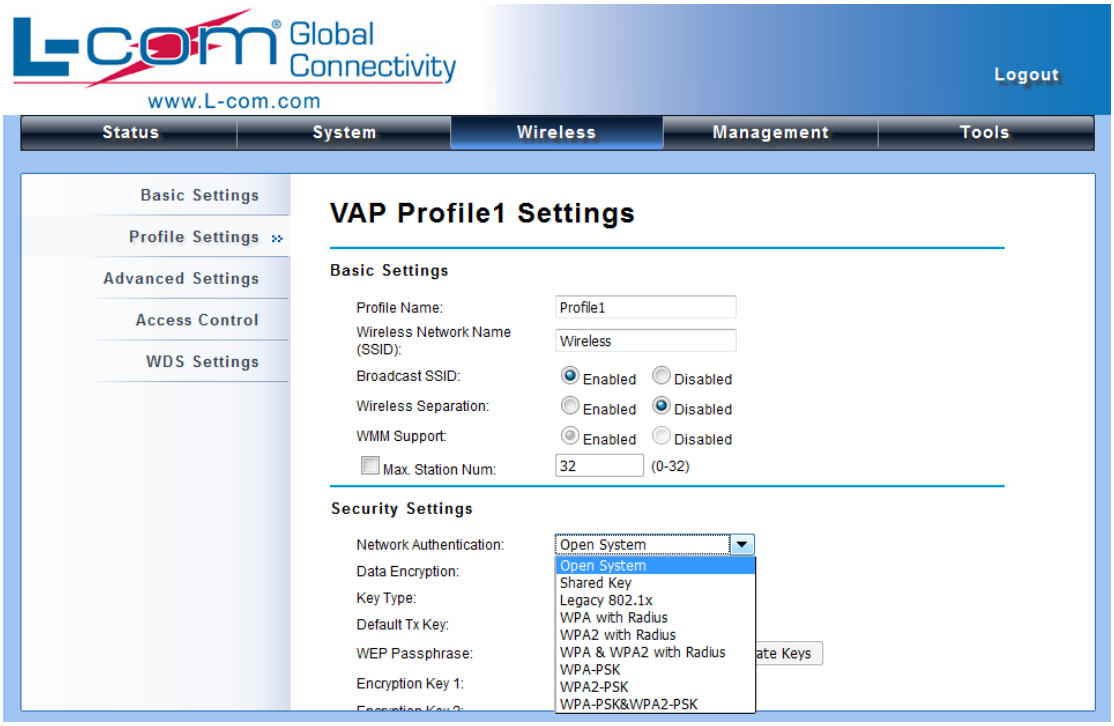
Note:

- In the example here, we only change the "Wireless Network Name (SSID)" as "Join_me", and later, we will show you if AP mode works correctly. In addition, for better coverage of the AP, you may also use an external antenna; if so, remember to set the antenna setting from "Internal (8 dBi)" to "External

(N-Type)" after your external antenna is successfully installed.

- To be reminded that you are able to choose "External (N-Type)" only when you have well done installing the external antenna; otherwise, it might cause damage IEEE 802.11b/g/n Wireless CPE itself.

2. If security is required, open **Wireless > Profile Setting** and enter "**VAP Profile 1 Settings**" as below. You may set the parameters like "Network Authentication" and "Data Encryption" for more secure network communication in your application. Click **Apply** to save the parameters.



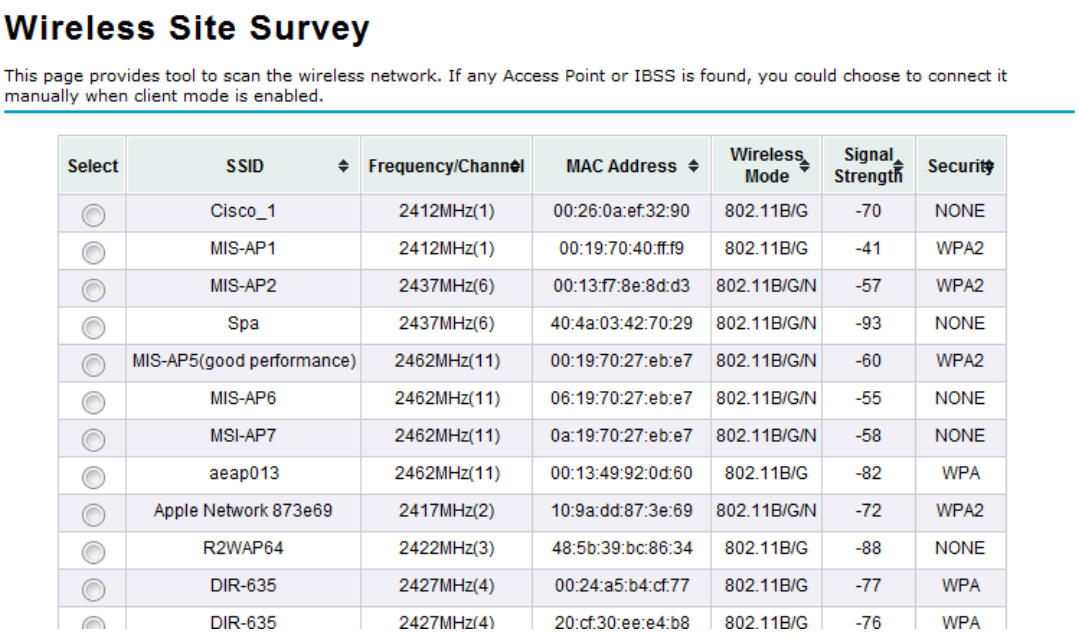
Wireless Client Mode

1. Choose **Wireless > Basic Settings**. Then you will see the “Wireless Basic Settings” page. Choose “**Wireless Client**” from Wireless Mode, and click **Apply** to save it. Feel free to change the other parameters to optimize your application before clicking **Apply**.

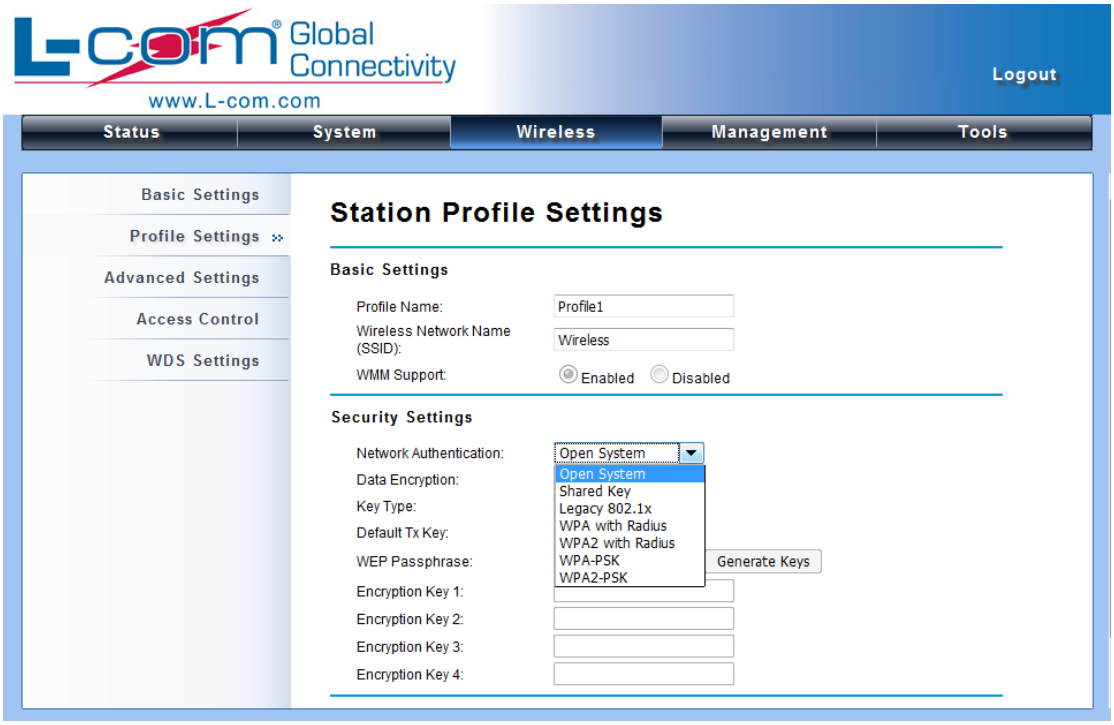
Note:

- For longer transmission of the CPE, you may also use an external antenna; if so, remember to set the antenna setting from “Internal (8 dBi)” to “External (N-Type)” after your external antenna is successfully installed, otherwise **do not** set to ““External (N-Type)” without physically attaching external antenna, otherwise, damage might be caused to the device itself.

2. Click the "**Site Survey"** button beside **Wireless Mode**. It will scan all the available access points within coverage. Select the one you prefer to connect to, and click **Selected** to establish the connection.


Wireless Site Survey
This page provides tool to scan the wireless network. If any Access Point or IBSS is found, you could choose to connect it manually when client mode is enabled.
Select
SSID
Frequency/Channel
MAC Address
Wireless Mode
Signal Strength
Security
Cisco_1 2412MHz(1) 00:26:0a:ef:32:90 802.11B/G -70 NONE
MIS-AP1 2412MHz(1) 00:19:70:40:ff:f9 802.11B/G -41 WPA2
MIS-AP2 2437MHz(6) 00:13:f7:8e:8d:d3 802.11B/G/N -57 WPA2
Spa 2437MHz(6) 40:4a:03:42:70:29 802.11B/G/N -93 NONE
MIS-AP5(good performance) 2462MHz(11) 00:19:70:27:eb:e7 802.11B/G/N -60 WPA2
MIS-AP6 2462MHz(11) 06:19:70:27:eb:e7 802.11B/G/N -55 NONE
MSI-AP7 2462MHz(11) 0a:19:70:27:eb:e7 802.11B/G/N -58 NONE
aeap013 2462MHz(11) 00:13:49:92:0d:60 802.11B/G -82 WPA
Apple Network 873e69 2417MHz(2) 10:9a:dd:87:3e:69 802.11B/G/N -72 WPA2
R2WAP64 2422MHz(3) 48:5b:39:bc:86:34 802.11B/G -88 NONE
DIR-635 2427MHz(4) 00:24:a5:b4:cf:77 802.11B/G -77 WPA
DIR-635 2427MHz(4) 20:cf:30:ee:e4:b8 802.11B/G -76 WPA

3. If the AP you connect to require authentication or encryption keys, click **Profile Settings** in the left column, fill out the corresponding items, and click " **Apply**" for data encryption.



Bridge Mode

1. Choose **Wireless > Basic Settings**. Then you will see the “Wireless Basic Settings” page. Choose “Bridge” from Wireless Mode, and click **Apply** to save it. Feel free to change the other parameters to optimize your application before clicking **Apply**.

2. Go to “**WDS Settings**” in “**Wireless**”, input the MAC address of the remote bridge to

"**Remote AP MAC Address 1**" field and click "**Apply**".

Global Connectivity
www.L-com.com
Logout
Status
System
Wireless
Management
Tools
Basic Settings
Profile Settings
Advanced Settings
Access Control
WDS Settings
WDS Settings
Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and set MAC addresses of other APs which you want to communicate with in the table and then enable the WDS.This function can work only in Bridge and AP Repeater mode.
WDS Separation:
Enabled
Disabled
Local MAC Address:
00:19:70:27:eb:ea
Remote AP MAC Address 1:
00:19:70:27:eb:ed
Remote AP MAC Address 2:
Remote AP MAC Address 3:
Remote AP MAC Address 4:
Apply
Cancel

Note:

Bridge uses the WDS protocol that is not defined as the standard thus compatibility issues between equipment from different vendors may arise. Moreover, Tree or Star shape network topology should be used in all WDS use-cases (i.e. if AP2 and AP3 are specified as the WDS peers of AP1, AP2 should not be specified as the WDS peer of AP3 and AP3 should not be specified as the WDS peer of AP2 in any case). Mesh and Ring network topologies are not supported by WDS and should be avoided in all the use cases.

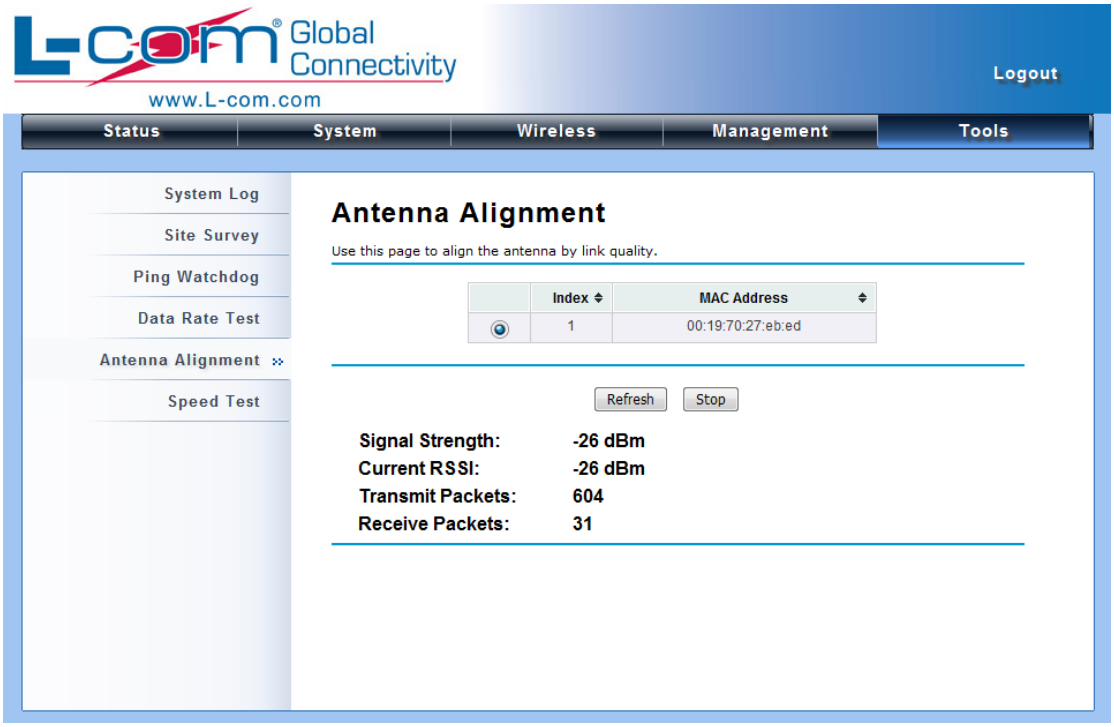
3. Repeat the above procedures to configure the remote IEEE 802.11b/g/n Wireless Outdoor CPE.

4. Use ping to check whether the link between the two bridges is OK.

5. To get a better wireless connectivity, antenna alignment is strongly recommended after both bridges are installed long distance apart.

6. Open "**Antenna Alignment**" in **Tools**. Choose the remote peer and click on the "**Start**"

button.



AP Repeater Mode

1. Choose **Wireless > Basic Settings**. Choose "**AP Repeater**" from Wireless Mode, and click **Apply** to save it. Feel free to change the other parameters to optimize your application before clicking **Apply**.

Note:

- For longer transmission of the IEEE 802.11b/g/n Wireless CPE, you may also use an external antenna; if so, remember to set the antenna setting from "Internal (8 dBi)" to "External (N-Type)" after your external antenna is successfully installed, otherwise **do not** set to ""External (N-Type)" without external antenna, in case IEEE 802.11b/g/n Wireless CPE has damage....

2. To establish point-to-point bridge connection, please follow the procedures described in Bridge mode. To connect the wireless client to the AP, please follow the procedures described in Wireless Client mode.

Congratulations! You have primarily completed configuration on the IEEE 802.11b/g/n Wireless Outdoor CPE and they can be put into operation. For more advanced configurations, please refer to the User manual.